

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

CLAIMS

1. A method comprising steps of:
 - covering a first area in a dielectric, said dielectric having a first dielectric constant;
 - exposing a second area in said dielectric to a dielectric conversion source so as to

5 increase said first dielectric constant of said dielectric in said second area to a second dielectric constant.
2. The method of claim 1 wherein said covering step comprises covering said first area in said dielectric with photoresist.
3. The method of claim 1 wherein said dielectric conversion source comprises E-beams.
4. The method of claim 1 wherein said dielectric conversion source comprises I-beams.
- 15 5. The method of claim 1 wherein said dielectric conversion source comprises an amine based chemical.
- 20 6. The method of claim 1 wherein said dielectric conversion source comprises oxygen plasma.

7. The method of claim 1 wherein said dielectric is hydrogen silsesquioxane.

8. The method of claim 2 further comprising steps of:

stripping said photoresist;

5 etching a plurality of interconnect trenches in said first area in said dielectric and

etching a plurality of capacitor trenches in said second area in said dielectric.

9. The method of claim 8 further comprising a step of filling each of said

10 plurality of capacitor trenches and each of said plurality of interconnect trenches with metal.

10. The method of claim 9 wherein said metal is copper.

11. A method comprising:

15 forming a dielectric layer in a semiconductor die, said dielectric layer having a first

dielectric constant;

covering a first area of said dielectric layer;

exposing a second area in said dielectric layer to a dielectric conversion source so

as to increase said first dielectric constant of said dielectric layer in said second area to a

20 second dielectric constant;

etching a plurality of interconnect trenches in said first area in said dielectric layer;

etching a plurality of capacitor trenches in said second area in said dielectric layer;

filling said plurality of interconnect trenches and said plurality of capacitor trenches with metal.

12. The method of claim 11 further comprising a step of performing a chemical
5 mechanical polish after said filling step.

13. The method of claim 11 wherein said metal is copper.

14. A method comprising:

10 forming a dielectric layer in a semiconductor die, said dielectric layer having a first dielectric constant;

etching a plurality of interconnect trenches in a first area in said dielectric layer;

etching a plurality of capacitor trenches in a second area in said dielectric layer;

15 filling said plurality of interconnect trenches and said plurality of capacitor trenches with metal;

performing a chemical mechanical polish on said first and second areas;

exposing said second area in said dielectric layer to a dielectric conversion source so as to increase said first dielectric constant of said dielectric layer in said second area to a second dielectric constant.

20

15. The method of claim 14 wherein said metal is copper.

16. A method comprising:
depositing a metal layer in a semiconductor die;
etching said metal layer to form a plurality of interconnect lines in a first area of
said semiconductor die and a plurality of capacitor electrodes in a second area of said
5 semiconductor die;

depositing a gap fill dielectric between said plurality of capacitor electrodes and
between said plurality of interconnect lines;

covering said first area in said gap fill dielectric, said gap fill dielectric having a
first dielectric constant;

exposing said second area in said gap fill dielectric to a dielectric conversion
source so as to increase said first dielectric constant of said gap fill dielectric in said
second area to a second dielectric constant.

17. The method of claim 16 wherein said covering step comprises covering said
15 first area in said gap fill dielectric with photoresist.

18. The method of claim 16 wherein said dielectric conversion source
comprises E-beams.

20 19. The method of claim 16 wherein said dielectric conversion source
comprises I-beams.

20. The method of claim 16 wherein said dielectric conversion source comprises an amine based chemical.

21. The method of claim 16 wherein said dielectric conversion source
5 comprises oxygen plasma.

22. The method of claim 16 wherein said gap fill dielectric is hydrogen silsesquioxane.

23. The method of claim 16 wherein said metal layer comprises aluminum.

24. A structure comprising:
an interconnect trench in a first area of a dielectric, said first area of said dielectric having a first dielectric constant;
a capacitor trench in a second area of said dielectric, said second area of said dielectric having a second dielectric constant;
said second dielectric constant being higher than said first dielectric constant.

25. The structure of claim 24 wherein said capacitor trench and said
20 interconnect trench are filled with metal.

26. The structure of claim 25 wherein said metal is copper.

27. The structure of claim 25 wherein said metal is aluminum.